

REMARKS

Claims 1 – 22 are pending in the present application. Claims 5, 18, 19, 20 and 22 have been amended. Claims 18, 20 and 22 were amended to more clearly claim Applicants' invention. Support for the amendment to claim 19 can be found in the specification, *inter alia*, at page 34, line 13 to page 35, line 1. Accordingly, applicants respectfully submit that no new matter has been added.

This amendment adds, changes and/or deletes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, are presented, with an appropriate defined status identifier.

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons which follow.

Claim Rejections Under 35 U.S.C. § 112, second paragraph

In the Office Action, claims 18, 19 and 22 were rejected under 35 U.S.C. § 112, second paragraph as being indefinite.

Applicants have amended claim 19. Applicants have also pointed out places in the specification where the Examiner may find express support for the amendments to claim 19. Applicants have also amended claims 18 and 22 to more clearly convey that it is the polyester film that is being claimed. Accordingly, applicants respectfully request reconsideration and withdrawal of the rejection of claims 18, 19 and 22 under 35 U.S.C. § 112, second paragraph.

Claim Rejections Under 35 U.S.C. § 103(a)

In the Office Action, claims 1 – 22 were rejected under 35 U.S.C. § 103 as being unpatentable over Sasaki et al. (U.S. Patent No. 6,096,684). Applicants respectfully traverse this rejection for the following reasons.

A. Comparison of the present invention with Sasaki et al.

Applicants assert that the Sasaki reference does not render the claims 1 – 22 obvious because the Sasaki reference does not teach a film wherein a ratio of the number of voids to film thickness of a porous polyester film is not less than 0.20 void/ μm as recited in claim 1. In other words, Applicants assert that the Sasaki reference does not teach or suggest all of the claimed limitations. Thus, the Examiner has failed to establish a *prima facie* case of obviousness. Applicants' assertions are supported by the results of experiments presented in the Rule 1.132 Declaration submitted herewith.

The Sasaki reference describes a porous polyester film. The Sasaki reference, however, does not address the "ratio of the number of voids to film thickness" of the film. The void-containing polyester film in Example 1 of the Sasaki reference, was measured by one of the inventors of the present invention for the "ratio of the number of voids to film thickness," as defined in the present application, and evaluated in terms of the reflectivity and handling property of the film, according to the methods described in the present specification.

As shown in Table 1 of the Declaration, the "ratio of the number of voids to film thickness" of the void-containing polyester films of Examples 1 – 12 of the Sasaki reference was less than 0.20 void/ μm in every case, thus failing to satisfy the "value of not less than 0.20 void/ μm limitation recited in claim 1 of the present application. Thus, the Sasaki reference does not teach or suggest all of the claimed limitations. Thus, Applicants assert that the Examiner has failed to establish a *prima facie* case of obviousness.

In addition to not teaching all of the limitations in claim 1, the Sasaki reference also does not teach the limitations recited in claim 11. Tables 1 – 3 of the Declaration show the ratio (η_0/η_s) of the melt viscosity (η_0) of the resin (polymethylpentene resin), which is the main component of polyolefin resin, to the melt viscosity (η_s) of polystyrene resin of the films described in the present application and the Sasaki reference. It is evident from Tables 1 – 3 of the Declaration that the films of the Sasaki reference did not conform to the formula recited in claim 11 of the present invention because the ratio (η_0/η_s) exceeded 0.8.

In the present invention (see specification at page 18, lines 8 – 17), in order to meet the limitation “ratio of the number of voids to film thickness of not less than 0.20 void/ μm ,” the ratio (η_o/η_s) of the melt viscosity (η_o) of the resin (polymethylpentene resin), which is the main component of polyolefin resin, to the melt viscosity (η_s) of polystyrene resin, must not be more than 0.8. The ratio η_o/η_s of the films of Examples 1, 2, 6, 7 and 8 of the present invention is 0.33, as shown in Tables 2 and 3. In contrast, the ratio η_o/η_s of the films in the Examples of the Sasaki reference exceeded 0.8 in every case (see Table 1 of the Declaration). It is clear, therefore, that the Sasaki reference does not teach or otherwise contemplate a film with a ratio η_o/η_s that is less than 0.8, as recited in claim 11. This is further evidence that the Sasaki reference does not teach all of the limitations of the claims in the present application. Applicants reiterate, therefore, that the Examiner has failed to establish a *prima facie* case of obviousness.

Based on the foregoing arguments relating to the failure of the Examiner to establish a *prima facie* case of obviousness, Applicants assert that the rejection of claims 1 – 22 over the Sasaki reference under 35 U.S.C. § 103 has been overcome. Reconsideration and withdrawal of the rejection is respectfully requested.

B. Superior qualities of the films of the present invention over the Sasaki reference

In addition to the foregoing comments regarding the failure of the Examiner to establish the *prima facie* case of obviousness, Applicants submit that the films of the present invention have superior qualities to the films of the Sasaki reference.

As is clear from the specification, the main object of the present invention is to solve the technical problems (i) to (iii) of void-containing polyester films (see specification at page 3, line 7 to page 5, line 2):

(i) (a) improvement in reflective power to visible light, and (b) simultaneous achievement of improvement of high reflective power to visible light and reduced reflectivity of both faces of a film, when used as a material for various reflector plates;

- (ii) improved handling property (resistance to crease) of film when used as a material for thermal transfer recording and as an insulating material for hermetic motors; and
- (iii) suppression of the occurrence of burring upon punching through-holes in a ceramic sheet multi-layer laminating step and improvement in punching performance.

The subject matter of claim 1, “a ratio of the number of voids to film thickness,” defines, as is clear from the description in the specification at page 7, line 16 – 19 and page 23, line 34 to page 24, line 13, the number of voids in the film thickness direction at the cross section in parallel to the stretching direction of a void-containing polyester film, i.e., the number of voids in the film thickness direction per unit length.

In the present invention, a greater “ratio of the number of voids to film thickness” means the presence of a number of voids overlapped in the thickness direction of the film. Setting this value to not less than 0.20 void/ μm is an essential feature of the present invention.

1. Why the porous polyester film of the present invention is superior in the reflective power to light

For an improved reflectivity of a film, it is essential to efficiently reflect a bundle of light, which entered the film from the film surface, back toward the surface. In the present invention, a greater “ratio of the number of voids to film thickness” means the presence, inside the film, of a greater number of voids in parallel to the film surface (interface of polyester/ space). Accordingly, most of the incident light is reflected by the voids toward the film surface and becomes the incident light from the film (see Reference Fig. 1(a) attached hereto). In contrast, as shown in Reference Fig. 1 (b), when the “ratio of the number of voids to film thickness” is small, the reflectivity to light also becomes small—even if fine voids are present in-comparatively large number.

2. Why occurrence of burring due to punching (through-hole punching process) of the porous polyester film of the present invention is improved

When a flat plate material is punched (cut), a great deformation applied before breakage of the material results in the occurrence of a burr. In the present invention, a greater

“ratio of the number of voids to film thickness” means a narrow space between voids in the thickness direction of the film, in which case, the resin part between voids is thin and a small deformation force (deformation amount) causes breakage, thus making a smaller burr (see reference Fig. 2(a)).

In contrast, as shown in Reference Fig. 2(b), when the “ratio of the number of voids to film thickness” is small, the distance between voids in the film thickness direction is wide even if fine voids are present in a comparatively large number. As a result, the occurrence of burring cannot be reduced sufficiently.

3. *Why the handling property of the porous polyester film of the present invention is improved*

Wrinkles, buckling and the like, of a film pose problems when the film is bent or folded. When the film is bent or folded, it is under stresses that are parallel to the film surface and different between the front and the back of the film (see reference Fig. 3(a)). In other words, a stress gradient exists in the thickness direction when seen at the film section. When the stress gradient is large, the resin part around the void is subject to a markedly non-uniform stress (greater deformation moment), and buckling occurs.

As mentioned above, a greater “ratio of the number of voids to film thickness” means a smaller spacing in the film thickness direction between voids in the film in the present invention. When the same stress gradient is created, the difference (moment of deformation) in the stresses imposed on the resin parts above and below the voids is smaller when there is a narrower spacing between the voids, thus preventing the occurrence of buckling (reference Fig. 3(b)). Accordingly, for the improvement of handling property of the film, it is important to make the “ratio of the number of voids to film thickness” larger.

In Tables 2 and 3 of the Declaration, the reflectivity and handling property of the films of the present invention were compared with the films of Examples 6, 8 and 9 of the Sasaki reference. The results reveal that the film of the present invention is clearly superior to the film of Examples 6, 8 and 9 of the Sasaki reference in terms of reflectivity and handling properties.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

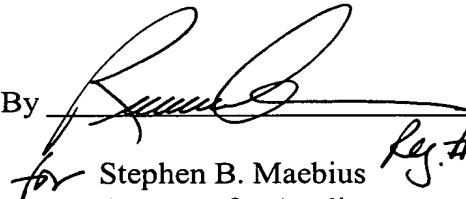
The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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